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ABSTRACT

This paper reports on a study as one aspect of research being conducted to document ways the Arts Connections Program (Cincinnati, Ohio) makes a difference in student learning. The study examines the effects of Arts Connections on higher order thinking and learning to learn skills of sixth-grade students (n=27) in 2 classrooms. One classroom, the intervention group, was located in an Arts Connections school, while the other, the comparison group, was located in a non-Arts Connections school. Intervention and comparison class tasks for the study involved working around the class connections with their second grade friends. Data were collected from classroom observation, field notes, student logs, student work, student self-evaluation of the experience, and report cards. Both groups were concerned about reaching out to their second-grade friends as their audience. All students demonstrated medium to high levels of creative engagement. Both groups also demonstrated an understanding of their strengths and weaknesses as they brainstormed the task, divided the work, and assigned roles to each other. Observation and videotape data showed that students from the intervention group began working immediately after the task was explained, made decisions regarding the project during the first day, and worked independently. The quality of artwork created by the intervention students showed greater quality than that of the comparison group students. Appended is a classroom observation checklist. (Contains 26 references.) (BT)

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An In-Depth Study to Document How the Arts Make a Difference in Student Learning[1]

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This paper reports on an in-depth study as one aspect of research that is being conducted to document some of the ways the Arts Connections Program makes a difference in student learning. This study examines the effects of Arts Connections on the higher order thinking and 'learning to learn skills' of 6th grade students.

Arts Connections is the banner program of the Association for the Advancement of Arts Education (AAAE) that started in Cincinnati, Ohio in 1997. In addition to the importance of contributing to the knowledge base about arts integrated instruction and learning, AAAE unapologetically admits to looking for data to support its advocacy of arts education among those in the business and corporate community, who are more easily convinced by "hard data," as well as among decision makers in the education community. Inside and outside the education community, there is intense debate about the validity of claims regarding the effects of student participation in the arts and the effects of arts integrated instructional designs on student learning and achievement that has generated intense activity and strong passions on both sides of the issue. AAAE, a non-profit service and advocacy organization, is actively involved in the debate in its own community in Cincinnati.

The purpose of the *Arts Connections* program is to assist teachers in developing the capacity to integrate the arts throughout the curriculum. Through AAAE sponsored

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[1] Paper presentation at the annual meeting of the American Educational Research Association (AERA) in New Orleans, April 2002.

professional development activities, teachers learn about using the arts in the classroom and how to integrate them into their teaching and assessment strategies. *Arts Connections* schools are engaged in teaching and learning using arts-integrated curricula similar to the experiences of the Chicago Arts Partnerships in Education (CAPE) schools (Burnaford, et al., 2001). In both the CAPE and the *Arts Connections* programs, teaching and learning with and about the arts are emphasized and attempts are made to consciously connect assessment with the arts or arts-integrated classroom activities.

Background

The effectiveness of interdisciplinary teaching incorporating the arts is well documented. Similarly, engaging students in the learning process and professional development to help teachers work with colleagues and adapt to their classroom situations are well documented (Burnaford, et al., 2001). Arts-integrated curricula help connect classroom lessons to real life (Fineberg, 1991). Fineberg reports that arts education programs enhance student abilities to apply higher order thinking to the arts and other content areas. However, tying the arts to class units or unit objectives can present a challenge (Frechtling, 2000). One study conducted in Kentucky examined the effects of the use of an arts-integrated social studies curricular unit on students' thinking and knowledge-based interactions as students used different forms of representation with the arts (Albert, 1995). Albert found that arts-integration in social studies influenced students higher order thinking.

The arts provide students with aesthetic experiences that pave the way to teaching and learning in five ways (Goldberg, 1997): (1) perception, (2) concentration, (3)

imagination, (4) contemplation, (5) and action. Costa (1985) considered aesthetics a very important element of any thinking skills program. Curtis (1981) advocated attention to student aesthetic awareness as performer, appreciator of the arts, and critic of the arts. The senses and the arts can play a very important role in learning and cognitive development (Eisner, 1981). If cognition depends on perception and on becoming aware, then students learn to express and discover different things about themselves and the world around them as they experience the arts (Eisner, 1992). Burnaford, Aprill, and Weiss (2001), note that *aesthetic experience provides children with metaphor and image* (p.17). Teachers' use of imagery that students know about and understand is important in learning and thought (Bransford, et. al., 1999). The arts provide children with experiences that can change their perceptions about themselves (Diehl, 2001). Wilson (2001) found that arts magnet schools succeeded in raising student achievement, attendance, and retention in the schools.

Learning through the arts can increase student engagement and improve motivation (Aschbacher, 1996; Baker & Bevan, 2000; Bossenmeyer, 1998). Student motivation impacts student transfer of learning (Ngeow, 1998). Students with high levels of participation in the arts demonstrated better academic performance compared with arts-poor students (Catterall, et.al.,1999). One elementary school in Texas found that students were thinking smarter, performing better, and improving their mathematics, reading, and writing scores on the Texas Assessment of Academic Skills as a result of the use of the arts in the curriculum (Chapman, 1998). An elementary school in Cleveland achieved top scores in the statewide proficiency tests as a result of learning though the arts (Elliot, 1999). Quesada (1998) documented effective integration of the arts into the

curriculum in high schools in California, Tennessee, and New York in the United States and British Columbia in Canada.

Providing students with opportunities for authentic intellectual work through the arts has been shown to improve test scores (Aprill, 2001). Erickson (1997) found evidence that discipline-based arts education helped students use knowledge-seeking strategies, broaden their knowledge base, and transfer their knowledge to real-life situations. However, Winner and Hetland (2000) report that there is no evidence to support the arts' effect on academic improvement and that these schools could also be instituting other kinds of innovations favorable to academic learning. They question the existence of a direct causal link between arts-integrated instruction and improved student engagement, motivation, and learning through the arts are based primarily on correlational research..

The *Arts Connections* Program

The application of knowledge, transfer of learning (Bransford, Brown, and Cocking, 1999), use of higher order thinking (Bloom, 1980; Resnick and Resnick, 1996), creative thinking (Williams, 1970), and learning to learn skills (Fineberg, group consultation January 19, 2000) are the focal point of the *Arts Connections* program. Conceptions about learning have evolved with greater focus on students' understanding and application of knowledge. Understanding and application of knowledge take into consideration problem solving and reasoning, metacognitive processes and self-regulatory capabilities, and cultural experience and community participation (Bransford, Brown, and Cocking, 1999).

Arts Connections member schools continue to improve their implementation and assessment of arts-integrated curricula as administrators, teachers, parents, and community members begin to recognize the important role of the *Arts Connections* program. Many schools that started with only one team of five to eight members in 1997 have continued to add teams as *Arts Connections* has developed. *Arts Connections* teams report that parents clamor for their children to be part of the program. To date, the *Arts Connections* program has touched the lives of 31,675 students. Since its inception, the program has trained 884 teachers, 88 administrators, 32 parents, and four community members. Class VI, the current *Arts Connections* cohort, has a total of 60 teams and 440 educators participating. More than 60 artists actively participate in the yearly AC summer training. During the five years of the program's existence, the program has received increasing financial support, giving testament to the recognition and impact the program is having in the community.

Evaluation of the *Arts Connections* program showed that teachers improved their teaching strategies through arts integration. Teachers perceived that they were more effective in their relations and communications with their students. Teachers also recognized their ability to make effective arts-related connections with other subject areas. Students were reported to be very comfortable in participating in the arts and were more engaged in their learning than before *Arts Connections*. Teachers reported that students retained their interests in the arts and participated in follow up of their arts experience activities. After three years, the Arts Connections program showed strong evidence that teachers improved their teaching strategies and their ability to make effective arts-related connections with other subject areas. Teachers also reported that

they believed student learning and achievement were related to the use of arts-integrated curricula.

Arts Connections Longitudinal Study

As a result of these evaluation findings, a longitudinal study was proposed. An *Arts Connections* research team was organized and consisted of representatives from the program sponsor (AAAE), evaluators from the Evaluation Services Center (ESC) at the University of Cincinnati and teachers from participating *Arts Connections* schools. This longitudinal study involved seven teams at six pilot schools. The participatory nature of the study was an important part of the research process. Having the program sponsor, the evaluator, school administrators, and teachers working hand in hand provided a well-rounded perspective for the design of the study. Isolating the effect of *Arts Connections* is difficult because of different school reform programs undertaken in various schools. With this in mind, the *Arts Connections* research team proposed an in-depth study.

Design and Methods

Establishing the context of the in-depth study

The primary focus of this paper is the in-depth study of two sixth grade classrooms, each with 27 students. One, the intervention group was located in an *Arts Connections* school. The other, the comparison group, was located in a non-*Arts Connections* school.

The *Arts Connections* research team located comparative schools within a school district with basically the same demographics for a more focused study. Context for the project and similarities between the comparison and intervention groups were

established. Both the intervention and comparison schools had obtained state grants. Both schools used their state grants for professional development. Both schools established high academic standards for their students. Both schools followed the same district curriculum. Class demographics in terms of size, gender, ethnicity, socio-economic background were basically the same. In the absence of any other academic base data, the fourth grade statewide proficiency results for both sixth grade classes were obtained. These results were basically the same for both classes. The administrators and teachers at both schools described themselves as valuing the arts. Art supplies and resources were available in both classrooms. In both schools, the study classrooms worked with second grade buddies. Both intervention and comparison classes' tasks for the in-depth study involved working around the classes' connections with their second grade buddies. The teachers claimed that their learning and teaching styles were basically the same. Part of their self-descriptors included the use of student-directed approach in teaching, a lot of discussions in class, and the use of humor in their interactions with the students. The research team conducted observations of the regular classes of the comparison and intervention class teachers and confirmed the teachers' claim about the similarity of their teaching styles.

There were four main contextual differences between the comparison and the intervention schools. Three concerned the way the arts were introduced into the classes; the fourth was a facility difference with respect to the availability of computers inside the classroom.

(1) The comparison group teacher did not use an arts-integrated curriculum. In the comparison class, the arts were considered as

different subject from the content areas introduced in class. The intervention group teacher experienced earlier professional development using the arts in the classroom as a result of the school state grant. The intervention group teacher was involved with the Arts Connections program. This involvement with the *Arts Connections* program enhanced the teacher's training in the use of the arts-integrated units in the class. The arts-integrated units, which were prepared during the summer *Arts Connections* teacher training, incorporates the district curriculum learning outcomes, state proficiency outcomes, the national arts standards, creative thinking, higher order thinking, and learning to learn outcomes. Assessments were prepared during the summer *Arts Connections* workshop and were used during the implementation of the arts-integrated units. The school *Arts Connections* team supported the intervention group teacher during the preparation of the arts-integrated lessons. As a result of the implementation of arts-integrated units in the intervention class, the use of the arts became a regular scenario for the intervention group students. They used the arts in learning and remembering their content areas as well as in working on their different projects in class and follow up activities to their arts experiences. The intervention group students also used the arts in problem solving.

(2) A review of the background of the two groups showed that the comparison group students did not have any other experience with arts-

integrated units. The comparison class had an arts focus but there were no concerted efforts to develop an arts-integrated curriculum. More often, the arts were taken as a non-academic subject. The intervention group students attended other academic and non-academic classes with teachers who were part of the *Arts Connections* team that were using arts-integrated units. The intervention group students had participated in the *Arts Connections* program for three years and experienced arts-integrated units throughout that period.

(3) The comparison group was a self-contained class where one teacher taught all the different sixth grade major content areas. The intervention group was not a self-contained class. There were different teachers for each of the sixth grade major content areas taught who were part of the *Arts Connections* team that had been involved with the *Arts Connections* program.

(4) There were only four computers in the classroom of the comparison group while there were ten computers in the intervention group's classroom. This facility difference was noted to see if it affected the choices made by students during the implementation of their tasks.

The Task

After considering the background and context, the *Arts Connections* research team brainstormed specific tasks to be given the intervention and comparison group students. Both teachers in the intervention and comparison classes agreed that their

science class learning outcomes were the same since they both followed the district learning outcomes. It was agreed that students would be asked to present the scientific method to their second grade buddies after three 45-minute preparation periods. The Scientific method was not an *Arts Connections* unit and both teachers agreed this was best.

Three preparation class periods were held on sequential days for both comparison and intervention groups. Students were not taken out of their classrooms. In both groups teachers were introduced in each other's classes as facilitators-observers. The task was introduced to the classes on the first day. Teachers gave the students a 3" x 8-1/2" cut paper with the written instruction, *Your task is to present the Scientific method to your buddies (2nd Graders). You will have three 45-minute class to prepare.* Along with this instruction, a one-page handout with written definitions of the *Processes of Science* was given to students as a review guide. No other instructions were given to the students. The standard answer for queries about the task was "It's up to you!" Teachers answered students' queries about materials, granted permission to students who chose to go out of the classroom to get materials or practice their presentations, and recorded all the students' questions. Four members of the *Arts Connections* research team were in both classes during the special project. Both classes were videotaped. School administrators from both intervention and comparison schools made short visits to the classes in all three sessions and during the presentation to the second grade buddies. Students in the comparison and intervention groups did not appear to be concerned by the presence of the observers and the use of the videotape in class.

The intervention class formed ten groups. Of these, three groups used Power Point to create presentations, two groups used posters, two groups used music (one featuring an original rap and one using the context of a music contest show), and three used a combination of experiment and original drama.

Students from the comparison class formed nine groups. Of these nine, two did Power Point presentations; one group presented using a poster; one group simulated a classroom situation and adapted music with original lyrics; one group wrote an original story and made use of puppets to tell the story; two groups imitated quiz shows; and two groups demonstrated experiments.

Data Collection and Analysis Strategies

Data for the study included the following:

1. Classroom observations: Class observations were scripted; i.e., extensive notes on actual speech and behaviors were recorded. No particular protocol, format, or structure was used except these scripts. A classroom observation checklist was used to provide a framework in analyzing observation field notes. Class observations were videotaped and later transcribed for analysis.
2. Field notes: These included evaluators' notes about meetings with administrators and teachers, informal interviews of teachers and administrators, teacher notes about student questions and student process, notes about student presentations to the second grade buddies for each school, notes during the debriefing of the study with the teachers, and transcript of post interviews with students. The main author conducted post interviews with the students to verify whether the use of the word

"present to your buddies (2nd graders)" instead of "teach your second grade buddies " made a difference in the decisions taken by the groups in presenting the Scientific method to the second graders.

3. Student logs: Students were asked to log any work on the project that they did outside of the classroom during the three-day period of project conception and product development.
4. Student work: Student output was evaluated. The intervention group produced three Power Point presentations, three drama presentations, two posters, one game show, and one rap-singing group. The comparison group produced two Power Point presentations, two game shows, two experiments, one poster presentation, one classroom simulation with singing, and one puppet show.
5. Student self-evaluation of the experience: The teachers designed a "Self-Evaluation" form that was given to both the comparison and intervention group students immediately after the special project experience.
6. Student report cards and proficiency reports: Copies of end-of-year student report cards and the sixth grade state proficiency scores were gathered. The intent was to identify possible effects of Arts Connections on student academic performance.

Teachers and school administrators were involved in identifying the project, developing the question, and analyzing the data. Administrators' and teachers' insights were taken into account in the final content analysis of the data. The Classroom Observation Checklist (see Appendix A) was used as a major categorizing tool for the observation data and field notes. Analysis of the classroom observation focused on the following: (a) classroom conditions, orientation, and instructions the students received

during the special project; (b) the process the students underwent (e.g. questions they asked, the level of engagement they exhibited in the project; (c) the roles played by the students in the groups; (d) the decisions and negotiations the students made; (e) choice of presentations, etc.); and (f) the outcomes of the project (e.g. the content of presented materials, the props and materials used, student deportment during the presentation, delivery and execution of the task). Student work was analyzed for content and presentation. Grounded-theory was used to analyze the student work with respect to creative engagement. The comparison and intervention group students went through a debriefing of their experiences as they responded to the group and self-evaluation survey given to them by their teachers. Descriptive statistics were calculated from the quantitative portion of the survey. Content analysis was conducted for the qualitative portion of the survey.

Results

Similarities between the Intervention and Comparison Groups

Students from both groups were concerned about reaching out to their second grade buddies. Both groups were heard discussing the level of understanding of the second graders and what would appeal to them. Teacher notes, student questions, student interviews, and student self-evaluation corroborated this observation. All students demonstrated medium to high levels of creative engagement. Students in both groups knew the Scientific method very well. Both were able to define and show understanding of the concept. Both groups also demonstrated an understanding of their strengths and weaknesses as they brainstormed the task, divided the work, and assigned roles to each

other. Both groups showed indications that they were learning from each other as they exchanged opinions during the planning of their tasks. During the three-period preparation session, both groups generated ideas for multiple solutions to their tasks and different ways of doing things.

Differences Between Comparison and Intervention Groups

Observation and videotape data showed that students from the intervention group began working immediately after the task was explained and made decisions regarding the project during the first day. Working groups were formed immediately on the first day. Leaders emerged and teamwork was observed right away as groups discussed the task. Division of labor was evident right from the first day.

Students from the comparison group took some time before they finally organized their groups and decided what they would like to do. Almost all students took note cards and worked independently. It took some time before they discussed and worked with their would-be members during the first day. Emergence of some of the groups was evident only towards the end of the first day. Some of the groups were not formed until the second day. Two groups that had difficulty deciding what to do eventually joined together and made a last minute decision on a quiz show presentation during the last day of preparation. Student logs and student interviews corroborated these observations.

Class observations and videotape data showed that the intervention student groups worked independently. The intervention group students were self-directed. As a group they discussed and learned from each other. They decided on roles and assignments in the project based on their appraisal of their own strengths. Animated discussions about this

were heard during the observation. They were conscious of their constraints and monitored their own activities to meet the requirements of their task. They took risks in creating the presentations, innovating and adapting their work as their conditions permitted and as the need arouse. They took risks with their scripts and props. They critiqued each other as well as their work. They exerted more effort thinking about the given problem and were engaged in more problem solving and self-correcting as they went through the project than the comparison group. They showed intense curiosity about the project. They asked questions as soon as they were told about the project. Intervention group students showed more visible evidence of their enjoyment of the project. They shared ideas, suggested alternatives, and made collaborative decisions based on the limitations they saw in their content, props, space, and time. Student logs and self-evaluation also corroborated these results.

Decisions to use arts-related approaches came easier for the students in the intervention group than for those in the comparison group. Class observations, videotapes, and student interviews confirm this finding. In general, the intervention groups demonstrated better use of the arts and better deportment, content, expressions, and presentations than did the comparison groups. All intervention groups used colorful, original, and makeshift props in their presentations that were large enough to be visible to their second grade audience. Presentations of the intervention groups were organized and systematic. Students had clear voice projections and were confident in their presentations.

All ten student groups in the intervention class used the arts and their artistic talents in their presentation, including those that did the PowerPoint presentations. One of the groups that presented a game show used all four art forms of drama, music, visual

arts, and dance. Another group, the rap-singing group, used the visual arts, dance, and music. The two poster groups and three PowerPoint groups all used the visual arts. The three remaining groups used drama as they created and presented a play complete with actions and props.

Six of the nine groups of comparison group students tried to use the arts in their project: two PowerPoint groups, one poster group, and one game show, simulated class with adapted music group, and one puppet group. The two groups that used PowerPoint made use of the colors available in the software but not much clip art or animation, unlike the intervention groups that made use of a lot of colors and animation. One group from the comparison students made a poster with very small writing that was difficult to read from a distance. One group produced a colored wheel chart to be used in their game. However, the colored chart was so small (3-inches in diameter) that it was hard to see the chart when it was being passed around. The group that used music adapted the words and used the melody of the adapted song for their presentation. The narrator of the group that used puppets hid under the table throughout the time the story was read.

Intervention group students showed more intensity and concentration in their tasks and were able to finish sooner than comparison group students. Three intervention groups were already practicing their presentations as early as the second day. All ten groups were ready by the end of the third day. In contrast, the three 45-minute sessions did not seem to be enough time for the comparison groups. At the end of the three days, while seven of the groups had developed their concept, two of the groups were still not certain about what to do. Only two of the groups had the chance to practice what they would present. The other groups did not finish in time to practice their presentation.

Analysis of student products revealed that the intervention group students learned more and shared more in the implementation of their task to present the scientific method to their second grade buddies. The intervention group students provided more examples and application content than comparison group students. More products from the intervention group went beyond a basic definition of terms and provided real-life examples. Six out of the ten intervention groups used real-life examples in all their presentations in contrast to only three of the comparison groups. Confirmation of this observation was made through samples of the student work, performance based assessments of the groups, together with the *Arts Connections* debriefing with the teachers.

Student responses to the self-evaluation forms for both comparison (n=25 out of 27) and intervention groups (n=23 out of 27) indicated that the students experienced very good group process. Intervention group students showed more consistency in their self-ratings. There was wider discrepancy in the self-ratings of the comparison group students.

Except for one neutral response, 22 out of the 23 intervention students who responded to the question, "Would you like to do similar projects in class in the future? Why?", said that they would because it was fun and a good learning experience.

Yes. I would do similar projects because it was fun and I learned a lot.

Yes, I would like similar projects in the future because I thought it was fun and it taught us something.

Sixteen out of 25 comparison group students who responded to the same question said that they would like to do a similar project because it is fun. Two comparison

students remained neutral. However, seven out of 25 comparison students said they would not like to do a similar project because "*it is stupid and boring*".

Post interviews of students showed that 90% of the intervention students thought "present" and "teach" were synonymous while only 70% of the comparison students thought the two words were the same. However, students from both the comparison and intervention groups said they would have made the same decisions and presentations even if the instruction they received had been "to teach the scientific method to your second grade buddies".

Sixth grade state-wide science proficiency scores for the special project's intervention group were slightly better than those of the comparison group, although not significantly so. Ninety-six percent of intervention students received proficient and advanced proficient scores compared to 89% of the comparison group. Only one of the students in the intervention group, a transferee to the school, received a below average sixth grade science proficiency score. Three students from the comparison group received below average sixth grade science proficiency rating. Of these, two were rated proficient on their 4th grade science exam and were expected to be proficient as well in their sixth grade science proficiency. The third student posted below average performance on the 4th grade science proficiency exam and did not make progress in the sixth grade proficiency exam. The intervention group science teacher said that the science *Arts Connections* units were helping students on their sixth grade science proficiency test, particularly the earth-space science and life science sub-scales since they remembered the concepts better because of the arts-integration into the science curriculum.

Discussion and Conclusion

There were major differences observed in comparing the intervention and comparison groups. The intervention group students seemed to be able to find more meaning and order in the task. They were more engaged in the task and their learning. They were self-directed, self-aware learners. More intervention group students enjoyed the special project and were willing to do a similar project. Also, intervention group students were more consistent in their expression of enjoyment of the special project. More intervention group students claimed they learned from the experience in the special project.

Both intervention and comparison groups took into account their second grade buddies as their audience. However, the quality of output of the intervention groups in terms of content, presentation, roles played by the group members, as well as presentation strategies, was better than that of the comparison group. In presenting the concept of the scientific method to their second grade buddies, all ten groups of intervention students used different art forms, had better deportment, were visible, audible, and maintained eye contact with their audience unlike the comparison group students were only a few groups used the arts, some of the groups hid from the audience, most of the groups did not have voice projections, and have not connected with the audience. All students in the intervention group were comfortable with the use of arts. All ten groups of intervention students went beyond definition of terms. They used real life examples to explain the concept. The quality of artwork created by the intervention students was better than those of the comparison group students. All intervention groups used different art forms. They were lively, colorful, and showed evidence of use of basic art elements.

In terms of roles played in the group, the intervention groups were team players. They negotiated roles, assumed different leadership roles, made decisions together, solve problems, and self-corrected themselves. This is a big contrast with the comparison group that took time before they were able to form groups, make decisions within the group, and negotiate roles within the group.

In terms of application of knowledge, problem solving, and creativity, the intervention group students were willing to take more risks, explore more ideas, and created more original output. They were more creative with their output than the comparison group. The intervention group showed greater ability in solving unforeseen problems about their task as they delved into issues about the content and manner of presenting the scientific method. They constructed more meanings in the task and elaborated on their ideas as they went beyond definitions of the terms and illustrating experiments. More student teams in the intervention group connected the concept of Scientific method to real life situations than did the comparison group. More students in the intervention group were able to put the information together in new and different ways and were able to critique their own presentations meaningfully. They were able to reason out why they chose a particular activity for their own learning and that of their buddies.

It appeared that the intervention students' previous experience with arts integration in their course work provided them with more ideas, greater motivation to strive for excellence, and enjoyment of the process they undertook preparing for the presentation of the concept of scientific method to their second grade buddies. Participation in the arts demands striving for excellence. The intervention group students

were striving for excellence. They looked at different ways of making their presentations better. They made time and incorporated practicing the presentation among all of the other tasks involved in the project. It also appeared that using the arts to convey concepts and ideas had become second nature to them. Observing them, it was evident that the intervention group students found it easy to transfer their learning to real life situations and examples while using art as the medium in their communication of ideas. During the post interviews, the intervention group students said that they could not imagine doing the tasks asked of them without the arts. The use of the arts helped the intervention group students in terms of self-regulating their activities and keeping on track with the tasks they set out to accomplish.

The intervention group students, who were the ones involved in arts-integrated curricula and instruction, were more effortful. This was evident in the different creations they developed for their presentation. It was also evident in the extraordinary attention paid to details in preparing their presentations, going out of their way to look for props and materials, and working outside the class to complete their projects. They were more self-directed, self-aware learners. They were able to execute complex tasks. They were able to handle risks and uncertainties. They were very creative and were able to elaborate their ideas. They were able to synthesize and meaningfully evaluate their work.

Continued research is needed to fully explore the impact of arts-integrated curricula, and in particular, the *Arts Connections* Program, on student learning. However, this in-depth look at student learning behaviors indicates that arts integration may contribute to more directed learning to learn and higher order thinking. While work with

Arts Connections pilot schools for the longitudinal study continues, arrangements are being made for another in-depth study to compare two-second grade classes.

From the perspectives of a pilot school team and administrator who were involved in this study, this study provided a basis on which to make judgments regarding the impact of an arts-integrated curriculum on student learning.

> *Our teachers have been planning and implementing arts integrated units of study for students. We could certainly see that students' attitudes about school were positive, their excitement for learning was evident, and the information presented in the units seemed to be retained based upon teacher assessments at the end of the units. However, the study provides an opportunity for non-biased, outside observers/researchers to gather and analyze information before, during, and after implementation of the arts-integrated units. The study also provides opportunities for teachers, the practioners in the field, to interact/collaborate with the research team. The discussions are very helpful for teachers because they confirm their work and thinking about teaching and learning.*

The *Arts Connections* teams look forward to the future. As an administrator posits:

> *We are looking forward to a continued relationship with AAAE and ESC as we study results of arts-integrated curriculum lessons on student learning. I believe that teachers will benefit by receiving valuable feedback on their planning, implementation,*

and assessments of arts-integrated units. Administrators will be able to reflect upon their facilitation efforts for supporting teachers and students. Having data that spans five years will provide support and credibility for the school's efforts in providing an arts-enriched curriculum experience for students.

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Appendix A. Classroom Observation Checklist

Teacher _____ School _____

Grade____. Content Area: _____ # of students (Total) ____; (Boys) ____, (Girls) ____.

Draw a picture of the classroom

1. Classroom Context

1.1. Instructional Format

1.1.1. Teacher directed activity

- Didactic
- Whole class discussion / dialogue
- Reflective discussions
- Performance or demonstration by teacher

1.1.2. Teacher guided activity

- Modeling
- Scaffolding
- Guided practice
- Metacognitive guidance

1.1.3. Student directed activity

- Hands-on, experiential activities
- Open study or work time
- Student brainstorming

1.2. Instructional Content

1.2.1. Level of Transfer

- No references to previous material
- References to previous material

1.2.2. Authentic, Real World Content

- Real world situations with active engagement.
- Real world situations the teacher talks about.

2. Instructional Materials

2.1. Linguistic Materials

- Books
- Audio tapes
- Keyboards or pencils/pens for writing

2.2. Logical-Mathematical Materials

- Calculators
- Manipulatives
- Science equipment
- Math games (flash cards, etc.)

2.3. Bodily-Kinesthetic Materials

- Craft supplies (scissors, glue, clay, beads)
- Manipulatives
- Room space (dance/physical activities)
- Sports equipment (balls, bats, nets)
- Art equipment (woodworking)
- Olfactory/gustatory supplies (food, aromas)

2.4. Visual-Spatial Materials

- Graphs or maps
- Videos

	Pictures, illustrations								
	Photography equipment								
	Mazes, puzzles								
	2.5. Musical Materials								
	Musical instruments								
	Tape recordings								
	Computer software w/ sound or music								
	2.6. Interpersonal Materials								
	Student's peers								
	Costumes or props for role playing								
	Human represents (dolls, stuffed animals)								
	Board games or party supplies								
	Outside speaker or presenter								
	2.7. Intrapersonal Materials								
	Self reflective journals								
	Quiet time for meditation								
	2.8. Naturalistic Materials								
	Manipulatives								
	Data used in categorizing or classifying								
	3. Assessments								
	3.1. Student Assessments & Student Feedback								
	3.1.1. Linguistic Assessments (written and oral)								
	Quizzes, tests, exams								
	Essays, papers								
	Journals								
	Questioning (in-class)								
	Interviews								
	Oral presentations								
	Process descriptors (think aloud)								
	3.1.2. Logical-Mathematical Assessments								
	Math quizzes, tests, exams								
	Science projects or reports								
	3.1.3. Bodily-Kinesthetic Assessments								
	Dance performances								
	Skits or play performances								
	Art projects								
	3.1.4. Visual-Spatial Assessments								
	Student produced graphs, charts, maps								
	Drawings, illustrations, photographs								
	Visual presentations								
	Student performance on mazes or puzzles								
	3.1.5. Musical Assessments								
	Student musical compositions								
	Student singing ability								
	Performance on musical instruments, recitals								
	3.1.6. Interpersonal Assessments								
	Group projects and problem solving								
	Debate performances or peer critiques								
	Collaborative and cooperative behavior								
	3.1.7. Intrapersonal Assessments								

Self reflective journals								
Student-teacher conferences								
3.1.8. Naturalistic Assessments								
Science reports or projects								
3.2. Teacher to Student Feedback								
Verbal feedback								
Written feedback (paragraph, comments)								
Kinesthetic feedback								
Scores or letter grades on test, project, paper								
4. Student Behaviors								
4.1. Bloom's Taxonomy of Critical Thinking								
4.1.1. Knowledge								
Recall of previous material, learning the info								
Defining, listing, describing, matching, naming								
4.1.2. Comprehension								
Grasping meaning of material, understanding								
Explain, interpret, summary, translate, distinguish								
4.1.3. Application								
Using the learned material in a new way								
Generalize, apply, demonstrate, use, solve								
4.1.4. Analysis								
Breaking information into its component parts								
Compare, contrast, classify, organize, connects								
Distinguishes, infers, detects, groups								
4.1.5. Synthesis								
Putting information together in new & diff ways								
Hypothesis, construct, produce, propose, design								
Combines, formulates, composes, compiles, plan								
4.1.6. Evaluation								
Judging information (purpose & rationale)								
Judges, critiques, decides, appraises, justifies								
4. Student Behaviors								
4.2. Resnick's Higher Order Thinking Skills								
4.2.1. Non-algorithmic								
Students construct meaning and create their own structures on situations they encounter or tasks presented to them.								
4.2.1. Complex								
Students solve unforeseen problems about the tasks presented to them even if the there was no clear beginning or end about it at the outset.								
4.2.3. Multiple solutions								
Students present multiple solutions or different ways of doing things.								
4.2.4. Multiple criteria								

Students use various criteria in creating or producing an output.								
4.2.5. Uncertainty								
Students are able to risk and venture into the unknown to test desired effect on their product or output.								
4.2.6. Self-regulation								
Students assess/evaluate their own work, self-correct, and apply external standards to their own work.								
4.2.7. Imposing meaning								
Students find meaning and order in some apparent disorder they find in any materials or tasks before them.								
4.2.8. Effortful								
Students exert considerable effort thinking about a given problem								
4. Student Behaviors								
4.3. William's Taxonomy of Creative Thinking								
4.3.1. Fluency								
Generating many ideas, brainstorming								
4.3.2. Flexibility								
Generating different ideas / responses								
4.3.3. Originality								
Generating unusual, unique, new ideas								
Creating art, writing, poems, music								
4.3.4. Elaboration								
Generating enriched / expanded ideas								
Expanding upon previous work								
4.3.5. Risk taking								
Experimenting with and exploring ideas								
Alternative ways of addressing a problem								
4.3.6. Complexity								
Improve/explain ideas, revise previous work								
4.3.7. Curiosity								
Pondering & questioning ideas, critiquing								
4.3.8. Imagination								
Generating enriched / expanded ideas								
Creating new product, use new materials								
4.4. Miscellaneous Student Behaviors								
Limited engagement in lesson or activities								
Expressions of waning enthusiasm								
Enthusiasm, praise for activity / teacher								
5. Arts Connection Learning to Learn Goals								
5.1. Students are more self-directed,								

self-aware learners.								
Students possess the critical thinking skills necessary to identify their own strengths and weaknesses in the context of learning a task.								
They show problem solving abilities to self-assess and self-correct in their learning abilities.								
5.2. Students can see connections and look at learning in new ways.								
Students have the creative thinking skills necessary to connect knowledge and experiences from different subject areas.								
They are able to use what they already know to expand their understanding.								
5.3. Students are aware of and can work with multiple points of view and audiences.								
They can make and support inferences and justify conclusions appropriate in the context of learning a task and a given audience.								
They can classify and organize information in a variety of ways to enhance their learning.								
Their work is more creative.								
5.4. Students make a commitment to creating quality work and striving for excellence.								
They learn from mistakes and criticism.								
They can give constructive criticism.								

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